Retrovirology

Poster presentation

P02-11. Correlate of local adjuvanticity and inflammation for experimental vaginal adjuvants in mice

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Background

Development of mucosal adjuvants to elicit immunity in the female genital tract may have important implications for the development of vaccines to counter sexually transmitted infections. We have recently documented the vaginal adjuvant effect of the TLR9 agonist CpG-ODN, and a non-TLR targeting molecule α galactosylceramide (α-GalCer), an invariant natural killer T cell ligand, for induction of protective immunity in the murine female genital tract.

Methods

This study was undertaken to examine correlate of adjuvanticity in the vagina and the draining lymph nodes as well as inflammatory response elicited in the murine vagina following local administration of these two classes of vaginal adjuvants.

Results

Real time PCR array analysis of 84 genes involved in inflammation and initiation of immune response revealed that a group of 13 common cytokine genes are activated in the vagina within 24 h after vaginal administration of either CpG-ODN or α-GalCer, including Ccl2, Ccl7, Ccl12, Ccl19, Ccl20, Ccl22, Cxcl1, Cxcl5, IL-10 and the Th1-inducing molecules IFN-γ, Cxcl9, Cxcl10 and Cxcl11. Some of these genes were also expressed in the genital lymph nodes. Of note, up-regulation in gene expression of inflammatory cytokines TNF and IL-1β that are involved in overt inflammation was exclusively observed in the vagina of the CpG-ODN treated mice. This was concomitant with a higher degree of inflammation in the vaginal mucosa of the CpG-ODN group compared to that of the α-GalCer group.

Conclusion

In conclusion, these results indicate that there is a group of common genes that correlate with the adjuvanticity of CpG-ODN and α-GalCer in the vagina and the draining lymph nodes, and that the non TLR/MyD88 targeting adjuvant α-GalCer induces less local inflammatory reactions in the murine vagina compared to the TLR/MyD88 targeting adjuvant CpG-ODN. These findings may have implications for the development of mucosal adjuvants to counter sexually transmitted infections.